

Claims

- [c1] 1. A semiconductor structure formed on an insulating layer, the structure comprising:
- a gate having a first portion and a second portion;
 - a body region under the first portion of the gate;
 - a body contact adjacent to the second portion of the gate; and
 - a plurality of body paths connecting the body region to the body contact through a drain region.
- [c2] 2. The structure of claim 1, wherein the body paths are coplanar with a top surface of the body region.
- [c3] 3. The structure of claim 1, wherein the first portion is substantially parallel with the second portion.
- [c4] 4. The structure of claim 1, further comprising:
- a second portion body region under the second portion of the gate; and
 - an implant region including the body contact, the implant region connected to the second portion body region,
- wherein the body contact contacts the body region through the implant region, the second portion body

region and the body paths.

- [c5] 5. The structure of claim 1, further comprising:
a plurality of body path portions over the body paths,
wherein the plurality of body path portions connect
the first portion of the gate to the second portion of
the gate.
- [c6] 6. The structure of claim 4, wherein the implant region
includes at least one notched area extending under the
second portion of the gate.
- [c7] 7. A method comprising the steps of:
forming a body region on an insulating layer;
forming a gate having a first portion and a second
portion, the first portion of the gate formed on top of
the body region;
forming a body contact adjacent to the second por-
tion of the gate; and
connecting the body region to the body contact
through a plurality of body paths through a drain re-
gion.
- [c8] 8. The method of claim 7, wherein the body paths are
formed coplanar to a top surface of the body region.
- [c9] 9. The method of claim 7, wherein the first portion is
formed substantially parallel with the second portion.

- [c10] 10. The method of claim 7, further comprising the step of forming the gate with a plurality of body path portions over the body paths.
- [c11] 11. The method of claim 10, wherein the plurality of body path portions connect the first portion of the gate with the second portion of the gate.
- [c12] 12. The method of claim 7, further comprising the steps of:
- forming a second portion body region under the second portion of the gate;
 - forming an implant region including the body contact connected to the second portion body region; and
 - contacting the body region with the body contact through the implant region, the second portion body region and the body paths.
- [c13] 13. The method of claim 12, further comprising the step of forming at least one notched area in the implant region that extends under the second portion of gate.
- [c14] 14. The method of claim 7, wherein the body region is isolated from the gate.
- [c15] 15. A four-terminal silicon-on-insulator semiconductor device comprising:

an insulating layer;
a gate over the insulating layer having a first portion and a second portion;
a body region under the first portion of the gate;
a body contact adjacent to the second portion of the gate; and
a plurality of body paths connecting the body region to the body contact through a drain region.

[c16] 16. The device of claim 15, further comprising:
a second portion body region under the second portion of the gate; and
an implant region including the body contact, the implant region connected to the second portion body region,
wherein the body contact contacts the body region through the implant region, the second portion body region and the body paths.

[c17] 17. The device of claim 16, wherein the implant region includes at least one notched area extending under the second portion of the gate.

[c18] 18. The device of claim 15, further comprising:
a plurality of body path portions over the body paths,
wherein the plurality of body path portions connect the first portion of the gate to the second portion of

the gate.

- [c19] 19. The device of claim 15, wherein the body paths are coplanar with a top surface of the body region.
- [c20] 20. The device of claim 15, wherein the first portion is substantially parallel with the second portion.